Obesity in California:
The Weight of the State, 2000-2012

2014

California Department of Public Health
Nutrition Education and Obesity Prevention Branch

Executive Summary

Obesity Prevalence and Trends

From 1980 to 2010, national obesity rates more than doubled for adults and children 2 to 5 years, while approximately tripling among children 6 to 11 years and adolescents 12 to 19 years.[5-7] During the past several decades, obesity rates among all population groups have increased regardless of age, sex, race, ethnicity, socioeconomic status, education level, and geographic region.[6-9] In recent years, the national childhood obesity rate has leveled off. California is among a select few states that have reported modest decreases in childhood obesity rates possibly as a result of taking comprehensive action to address the epidemic.[10-12]

Although meeting the *Healthy People 2020* targets, a significant percentage (25.4%) of California adults and adolescents (15.8%) are obese.[1-3] Unfortunately, obesity rates among low-income children 2 to 4 years old (17.2%) and 5 to 19 years old (23.3%) exceed the targets (see table).[4]

These prevalence rates double when overweight and obesity are combined for adults and adolescents and nearly double among low-income children 2 to 4 years and 5 to 19 years.[1,2,4]

Prevalence of Obesity and *Healthy People 2020* Targets for Californians

Age	Overweight or Obese (%)[a]	Obese (%)[b]	*Healthy People 2020* Obesity Targets (%)
Low-Income Children			
2-19[c]	38.8	21.0	14.5
2-4	33.4	17.3	9.6
5-19	42.1	23.3	N/A
General Population			
12-17[d]	32.4	15.8	16.1
18+[e]	62.1	25.4	30.5

Notes: [a] Overweight and obese among children and adolescents is a BMI at the 85th percentile or greater; adult overweight is a body mass index (BMI) of 25 or greater. [b] Obese among children and adolescents is a BMI at the 95th percentile or greater; adult obesity is a BMI of 30 or greater. [c] 2010 Pediatric Nutrition Surveillance System. [d] 2011-12 California Health Interview Survey. [e] 2012 Behavioral Risk Factor Survey. N/A = not available.

Obesity and Health Disparities

Despite signs of progress, racial and ethnic, socioeconomic, and geographic disparities in obesity rates persist in California. Among low-income children 2 to 19 years, Hispanics, Native American/Alaskan Natives, Pacific Islanders, and youth ages 9 to 11 were disproportionately affected by obesity compared with other race/ethnic and age groups.[4] The rates of obesity are highest among those with very low income and lowest among higher income Californians.[1,13-15]

Recent data show that substantial differences exist in obesity prevalence by age and race/ethnicity which vary by gender in adults. For example, adults 51 to 64 years were twice as likely to be obese than 18 to 24 year olds.[1] Over one-third of African American females (41.6%) and Latinas (35.9%) were obese compared to the obesity rate of 21.6% in white females. A similar disparity was seen between Latino (33.2%) and white males (23.3%).[1]

In 2001, no California county had an adult obesity rate that exceeded the *Healthy People 2020* goal of 30.5%. However, by 2012, 21 of California's 58 counties had adult obesity rates of 30.5% or more.[17] For low-income children, the news is much worse. Only one county in California has an obesity rate among low-income preschool-age children that meets the national *Healthy People 2020* target of 9.6%[4,16] and no county has an obesity rate among low-income children aged 5 to 19 that meets the national *Healthy People 2020* target of 14.5%.[4,16]

Health Consequences of Obesity

Obesity increases the risk of many health conditions and contributes to some of the leading causes of preventable death, posing a major public health challenge.[18,19] Health conditions associated with obesity include:

- Coronary heart disease, stroke, and high blood pressure;
- Type 2 diabetes;
- Cancers, such as endometrial, breast, and colon cancer;
- High total cholesterol or high levels of triglycerides;
- Liver and gallbladder disease;
- Sleep apnea and respiratory problems;
- Degeneration of cartilage and underlying bone within a joint (osteoarthritis);
- Reproductive health complications such as infertility; and
- Mental health conditions.

State Indicators and Targets for Obesity Prevention

This report highlights current prevalence measures for breastfeeding, dietary behaviors, physical activity, and screen time among Californians to help evaluate the State's progress toward meeting the evidence-based objectives for obesity prevention.[20]

Breastfeeding

Breastfeeding has been shown to have a protective effect against obesity, with longer durations of breastfeeding being associated with additional reductions in obesity.[21] The American Academy of Pediatrics recommends that babies are breastfed exclusively for about six months and continue to be breastfed for a year or longer with complementary foods.[22] In California, only 27.4% of infants reach six months of exclusive breastfeeding.[23]

Dietary Behaviors

Fruit and Vegetables

With respect to dietary behaviors, fruit and vegetable consumption promotes nutrient adequacy, disease prevention, overall good health, and may also protect against weight

gain.[24-29] However, the consumption of five or more fruits and vegetables among Californians decreases with age. Only 59.6% of California children age 2 to 5 years and 47.6% age 6 to 11 years report consuming five or more servings of fruits and vegetables per day.[2] Among adolescents the prevalence drops to 25.8% with adults consuming the least at 23.4%.[1,2]

Sugar Sweetened Beverages

Limited consumption of sugar-sweetened beverages and fast food reduces the risk of weight gain and obesity,[30-34] but the latest data on sugar-sweetened beverage consumption indicate that sugar-sweetened beverage consumption increases from young childhood through adolescence with the proportion of 2 to 5 year olds drinking two or more sugar-sweetened beverages at 4.4%, 6 to 11 year olds at 7.5%, adolescents 12 to 17 years old at 29.5%. [1,2]

Fast Food

Approximately two-thirds of California's adults (63.6%), young children (64.7%), and older children (69.6%) report eating fast food in the past week.[2] Adolescents are more likely to eat fast food than other age groups in the State with over three-quarters (76.4%) of adolescents reporting that they ate fast food during the past week.[2]

Prevalence of Protective and Risk Factors for Obesity Among Californians

Age	Five or More Fruits and Vegetables per Day (%)[a]	Two or More Sugar-Sweetened Beverages per Day (%)[b]	Ate Fast Food in the Past Week (%)	Met Physical Activity Guideline (%)[c]	Two or Fewer Hours Watching Television (%)[d]
2-5[e]	59.6	4.4	64.7	45.6	63.4
6-11[e]	47.6	7.5	69.6	30.4	56.8
12-17[e]	25.8	29.5	76.4	16.1	48.4
18+[f]	23.4	15.8	63.6	25.3	25.3

Notes: [a] Children and adolescents report in servings; adults report in times. [b] Children and adolescents report in glasses; adults report in times. [c] Children and adolescents engage in 60 minutes or more of physical activity every day per week; adults achieve at least 150 minutes of moderate-intensity or 75 minutes a vigorous-intensity aerobic activity (or an equivalent combination) per week, along with muscle strengthening exercise at least twice per week. [d] Child and adolescent data are for weekends only; children age 2 not included in analysis. [e] 2009 (TV time; weekends only), 2011-12 California Health Interview Survey. [f] 2012 Behavioral Risk Factor Survey, 2011-12 California Health Interview Survey (fast food), 2011 California Dietary Practices Survey (TV time).

Physical Activity

Regular physical activity helps people maintain a healthy weight and prevent excess weight gain.[35,36] Yet, the majority of Californians fail to meet the physical activity guidelines. Although close to half (45.6%) of young children meet the physical activity recommendation, the prevalence declines through adolescence.[2] Only 30.4% of older children and 16.1% of adolescents engage in at least 60 minutes of physical activity every day per week.[2] Adults fare slightly better than adolescents, with one-quarter (25.3%) achieving the guideline for adults (see table).[1]

Lastly, screen time, particularly television viewing, is associated with poor diet quality and obesity.[37-39] In contrast to physical activity, as Californians age they spend more time watching television. The prevalence of limited television viewing (no more than 2 hours a day) is highest among young children 3 to 5 years (63.4%) and lowest in adults (25.3%).[40,41] Approximately half of California's older children and adolescents (56.8% and 48.4%, respectively) report spending two or fewer hours watching television per day.[40]

Obesity Is Costly

California has the highest obesity-related costs in the United States, estimated at $15.2 billion with 41.5% of these costs financed through Medicare and Medi-Cal.[42] In 2012, California Office of Statewide Health Planning and Development (OSHPD) data indicate that nearly half a million hospital admissions annually are due to obesity-related conditions in the State, accounting for $33.8 billion in hospital charges, representing a 39.7% increase since 2005.[43] If adult BMI was reduced by 5%, California could save $81.7 billion in obesity-related health care costs by 2030.[44] Individuals who are obese have medical costs that are $1,429 higher per year, or roughly 42% greater, than the costs of those with normal body weight.[45] Obesity has also been linked with reduced worker productivity, chronic absence from work, and medical expenditures that total $73.1 billion per year for full time employees in the United States.[46]

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Overview of Obesity

During the past 30 years, obesity rates doubled for adults and preschool children, while tripling among school-age children and adolescents.[6,7] The rise in obesity rates has reached all population segments –age, sex, race, ethnicity, socioeconomic status, education level, or geographic region.[6-9] Significant health disparities continue to exist by race/ethnicity, socioeconomic status, and geographic region. The high prevalence of obesity has significant health consequences and costs related to health care expenditures and worker productivity. In response to the obesity epidemic, the California Department of Public Health monitored indicators and targets for obesity prevention to track California's progress.

In this report, body mass index (BMI) is used to classify population segments as obese. BMI was selected as the indicator of obesity because height and weight data are widely available at the population level and correlates with amount of body fat. BMI [weight (kg)/height2 (m)] is calculated from clinically measured data for children, and from self-report height and weight measures obtained through telephone interviews with adolescents and adults. For children and adolescents, obesity is based on age- and sex-specific BMI percentiles and those with a BMI at or above the 95th percentile are considered obese.[47] Adults with a BMI of 30 or higher are considered obese.

Risk Factors for Obesity

There are a number of risk factors for obesity that can complicate the calories-in-calories-out energy balance relationship. Genetic factors may result in a predisposition for obesity, affecting fat storage and distribution as well as the rate of metabolism. Family environment factors can also affect children's weight status –parents' behaviors related to eating habits and active lifestyles increase their children's risk for being overweight or obese.[48] Furthermore, obese children are more likely to become obese adults.[49-51]

Health conditions such as hypothyroidism, Cushing's syndrome, and polycystic ovarian syndrome can cause overweight and obesity. Weight gain can also be caused by certain medications. Emotional factors such as boredom, anger, or stress can lead to overeating and weight gain. Smoking cessation can also lead to weight gain. Other factors such as older age, leading to muscle loss, menopause, and pregnancy, can contribute to weight gain that is difficult to lose. Finally, lack of sleep is also a risk factor for obesity.[48]

While there are many factors that contribute to weight gain and ultimately to obesity, inactivity, unhealthy diets, and eating behaviors are the risk factors most amenable to prevention. Inactivity is a result of sedentary behaviors such as a reliance on cars rather

than active transport; more time in front of televisions, computers, and other such technology; and jobs that require a majority of time to be spent sitting at a desk. Inactivity makes it easier to consume more calories than are burned. Additionally, sedentary lifestyles themselves are linked to an increased risk in coronary heart disease, high blood pressure, type 2 diabetes, colon cancer, and other health problems.[48]

Neighborhood environmental factors play a large role in a person's propensity for becoming obese. Lack of access to safe places to exercise in neighborhoods and busy work schedules are notable barriers to physical activity.[48] When asked about their neighborhood, one in ten Californian teens disagreed or strongly disagreed that the nearby park or playground was safe during the day, while half said the same of the nearby parks or playgrounds during the nighttime.[2]

On the other side of the equation, neighborhoods that lack access to healthy, affordable food stores, but ready access to oversized food portions in restaurants contribute to higher energy intakes that can be difficult to balance with physical activity.[48,52] Over one-third of adults in California reported that they seldom, never, or only sometimes could find a variety of good quality, affordable, fresh fruits and vegetables that they want in their neighborhood.[41] Eating out frequently is associated with obesity and when presented with larger portion sizes, people tend to consume a large amount of calories.[53,54] This is concerning as portion sizes of not only restaurant meals, but packaged foods as well, have been on the rise since the 1970s.[55] In California, two-thirds of people reported that they had eaten fast food at least once in the past week, while one in ten ate fast food four or more times.[2] Heavy food advertising for high-calorie foods encourages this consumption.[48]

State Obesity Surveillance and Data Sources

In California, surveillance of obesity is conducted using multiple data sources. Data from the Behavior Risk Factor Surveillance System (BRFSS) 2000 through 2010 are used to examine trends in obesity among adult. BRFSS is an annual, statewide random-digit-dial telephone survey of adults 18 years and older. Height and weight are self-reported by respondents. Due to changes in BRFSS survey weights, data from 2011 and beyond cannot be compared with previous years.

The California Health Interview Survey (CHIS) provides adolescent obesity rates for youth ages 12 to 17. CHIS is a statewide, random-digit-dial telephone survey with an extensive sample large enough to be statistically representative of California's population. Since 2011, CHIS has been conducted on a continuous basis with data providing one-year estimates; in 2009 and earlier, CHIS was conducted biennially. Height and weight are self-reported by adolescents.

The Pediatric Nutrition Surveillance System (PedNSS) in California provided child and adolescent obesity rates for 2- to 19-year olds from low-income families for 2000

through 2010. PedNSS was a program-based surveillance system that monitored the nutritional status of low-income children in federally funded maternal and child health programs: Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program; and Title V Maternal and Child Health Program (MCH). Height and weight data were measured and collected by staff at public health clinics. The Centers for Disease Control and Prevention discontinued the PedNSS at the end of 2012.

State Indicators and Targets for Obesity Prevention

California Obesity Prevention Plan

The California Obesity Prevention Plan focuses on policy and environmental change based on emerging evidence which shows that these factors play a critical role in efforts to address the obesity epidemic.[20] The Plan uses the CDC's evidence-based target areas at the individual level as indicators of successfully developing and implementing policy and environmental strategies that support Californians to:

- Increase breastfeeding initiation, duration, and exclusivity;
- Increase consumption of fruits and vegetables;
- Decrease consumption of sugar-sweetened beverages;
- Decrease consumption of high energy dense foods (foods that are high in calories but have low nutritional value);
- Increase physical activity; and
- Decrease television viewing time.[20]

This report includes current prevalence measures for each target area indicator, when available.

Healthy People 2020

Healthy People 2020 provides science-based, national objectives for improving the health of Americans.[16] The weight status objectives include specific targets for reducing obesity with the goal of achieving a 10% improvement from 2010 to 2020. This report will examine how California data compare to the *Healthy People 2020* targets:

- Reduce the proportion of adults who are obese (Target: 30.5%),
- Reduce the proportion of adolescents aged 12 to 19 years who are considered obese (Target: 16.1%),
- Reduce the proportion of children aged 6 to 11 years who are considered obese (Target: 15.7%), and
- Reduce the proportion of children aged 2 to 5 years who are considered obese (Target: 9.6%), and
- Reduce the proportion of children and adolescents aged 2 to 19 years who are considered obese (Target: 14.5%).

Obesity Prevalence and Trends

Adult Obesity

While the prevalence of obesity among California adults in 2012 (25.4%) was lower than the *Healthy People 2020* target of 30.5%,[16] the prevalence of obesity increased from 19.7% in 2000 to 23.8% in 2010 and has continued to rise.

Figure 1. Prevalence of Obesity Among California Adults, 2000-2012 BRFSS

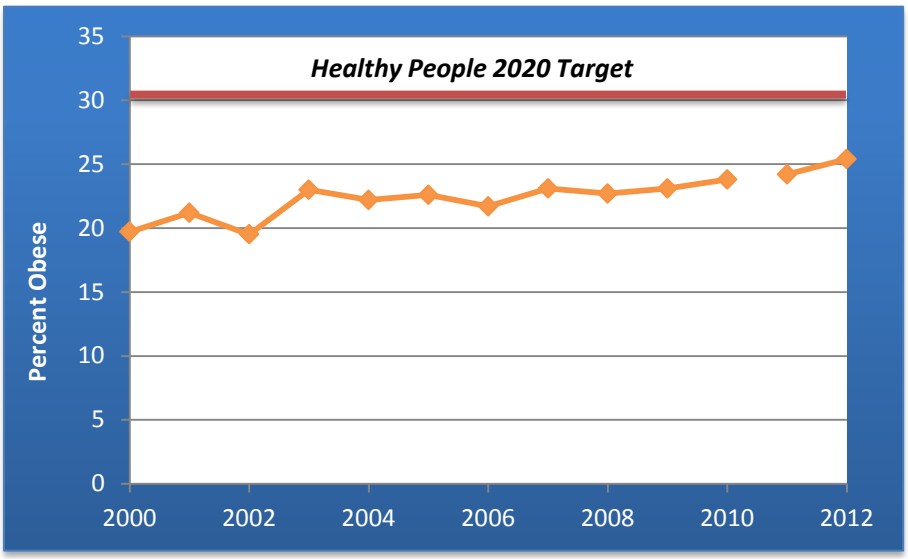


Table 1. Prevalence of Obesity Among California Adults, 2000-2012 BRFSS		
Year	**N**	**Obese (%)**
2000	3,968	19.7
2001	4,104	21.2
2002	4,256	19.5
2003	4,295	23.0
2004	4,295	22.2
2005	5,896	22.6
2006	5,453	21.7
2007	5,455	23.1
2008	5,616	22.7
2009	5,429	23.1
2010	5,547	23.8
2011	16,511	24.2
2012	4,599	25.4
Notes: The BRFSS weighting and methodology changed between 2010 and 2011, represented by a break in the trend line.		

Adolescent Obesity

The prevalence of obesity among California adolescents in 2011 was just below the *Healthy People 2020* target (16.1%).[16] But similar to adults, the prevalence of obesity among adolescents 12 to 17 years old increased between 2003 (12.4%) and 2011 (15.8%).

Figure 2. Prevalence of Obesity Among California Adolescents, 2003-2011 CHIS

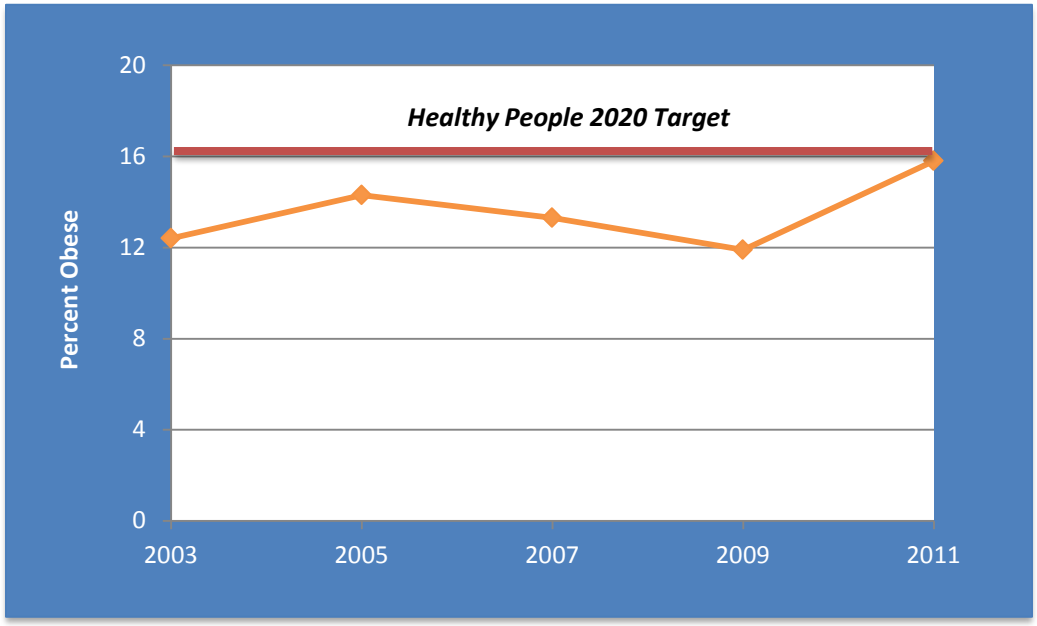


Table 2. Prevalence of Obesity Among California Adolescents, 2003-2011 CHIS		
Year	**Est. N**	**Obese (%)**
2003	403,000	12.4
2005	481,000	14.3
2007	466,000	13.3
2009	405,000	11.9
2011	494,000	15.8

Obesity in Low-Income Children

The prevalence of obesity among low-income California children aged 2 to 19 years in 2010 (21.0%) was substantially higher than the *Healthy People 2020* target of 14.5%.[16] The prevalence among low-income children 2 to 4 years remained stable from 2000 (16.7%) to 2010 (17.3%), while the rate among those aged 5 to 19 years rose from 19.7% in 2000 to 23.3% in 2010.

Figure 3. Prevalence of Obesity Among Low-Income Children in California, 2000-2010 PedNSS

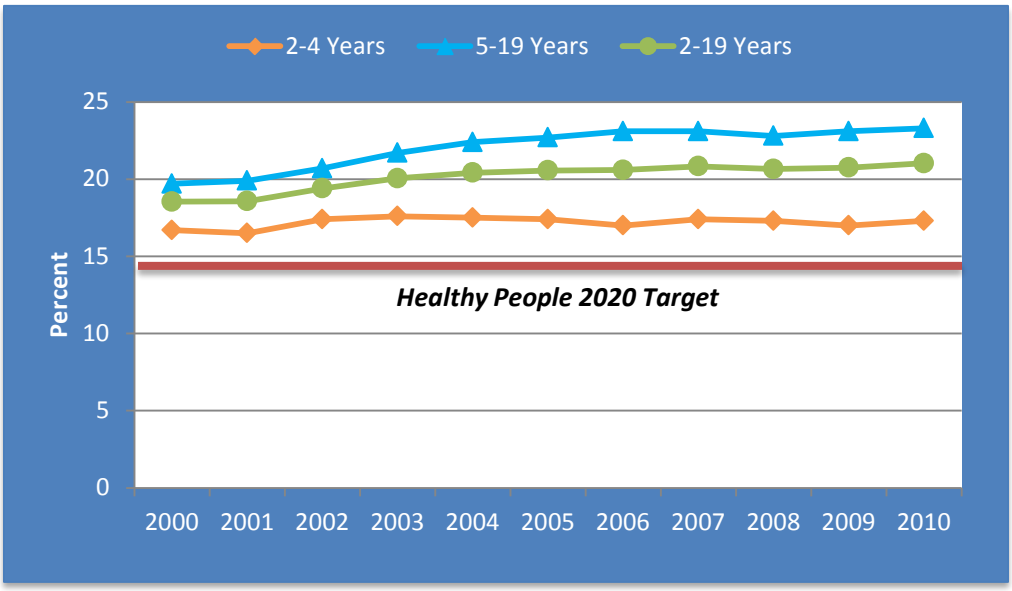


Table 3. Prevalence of Obesity Among Low-income California Children, 2000-2010 PedNSS

	2-4 Years		5-19 Years		2-19 Years	
Year	**N**	**Obese (%)**	**N**	**Obese (%)**	**N**	**Obese (%)**
2000	363,965	16.7	574,820	19.7	938,785	18.5
2001	306,084	16.5	474,493	19.9	780,577	18.6
2002	334,608	17.4	512,497	20.7	847,105	19.4
2003	344,384	17.6	512,204	21.7	856,588	20.1
2004	337,488	17.5	494,440	22.4	831,928	20.4
2005	331,975	17.4	490,680	22.7	822,655	20.6
2006	339,961	17.0	486,312	23.1	826,273	20.6
2007	312,190	17.4	473,184	23.1	785,374	20.8
2008	301,643	17.3	471,455	22.8	773,098	20.7
2009	332,663	17.0	531,378	23.1	864,041	20.8
2010	284,506	17.3	465,332	23.3	749,838	21.0

Obesity by Age

Adults

In California, no specific age group of adults exceeded the *Healthy People 2020* target of 30.5%.[16] However, the 35 to 64 year old adults are more likely to be obese compared to their younger and older counterparts, and those between 51 to 64 years old had an obesity rate more than twice that of 18 to 24 year olds.

Figure 4. Prevalence of Obesity Among California Adults by Age, 2012 BRFSS

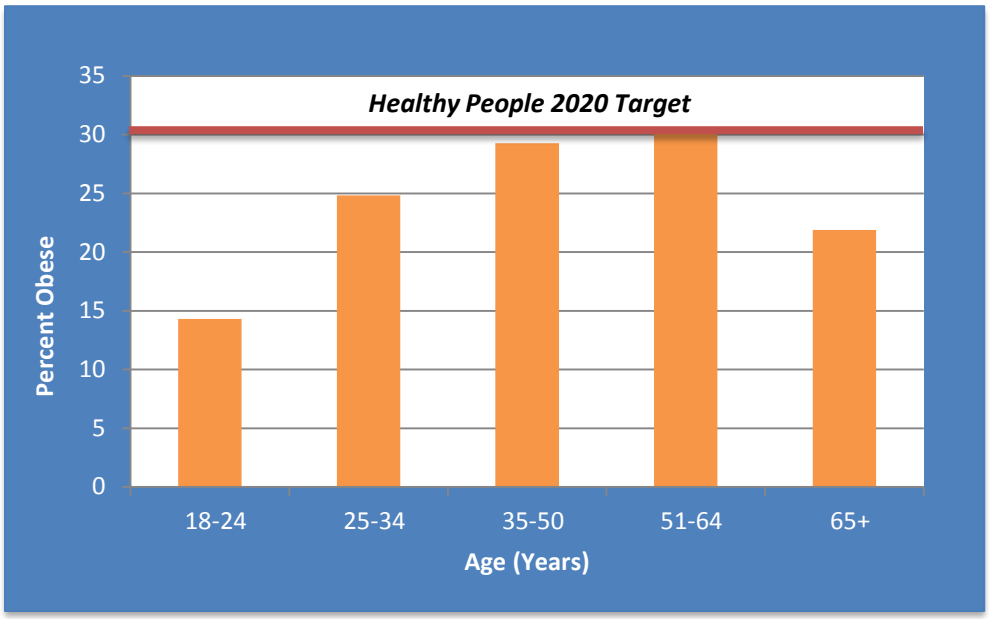


Table 4. Prevalence of Obesity Among California Adults by Age, 2012 BRFSS

Age	Obese (%)	CI
18-24	14.3	10.0-18.7
25-34	24.8	20.8-28.9
35-50	29.3	26.3-32.3
51-64	30.1	27.0-33.1
65+	21.9	19.1-24.6

Notes: CI = Confidence Interval.

Low-Income Children

In 2010, the prevalence of obesity among low-income children exceeded the *Healthy People 2020* targets for every age group; with the obesity rate in preschool-age children nearly double the *Healthy People 2020* target of 9.6%.[16] Among low-income children, obesity disproportionately impacts those 9 to 11 years old.

Figure 5. Prevalence of Obesity Among Low-Income Children in California by Age, 2010 PedNSS

Table 5. Prevalence of Obesity Among Low-income Children in California by Age, 2010 PedNSS		
Age	**Obese (%)**	**CI**
2-4	17.3	17.2-17.4
5-8	21.8	21.6-22.0
9-11	27.8	27.5-28.1
12-14	25.0	24.7-25.3
15-19	20.0	19.8-20.2
Notes: CI = Confidence Interval.		

Obesity by Racial and Ethnic Groups

Adults

In 2012, the prevalence of obesity in African American females (41.6%), Latinas (35.9%), and Latinos (33.2%) exceeded the *Healthy People 2020* target of 30.5%.[16] Regardless of gender, California's Asian/Other adults show the lowest rates of obesity (15.9% of males and 8.8% of females).

Figure 6. Prevalence of Obesity Among Adults in California by Sex and Race/Ethnicity, 2012 BRFSS

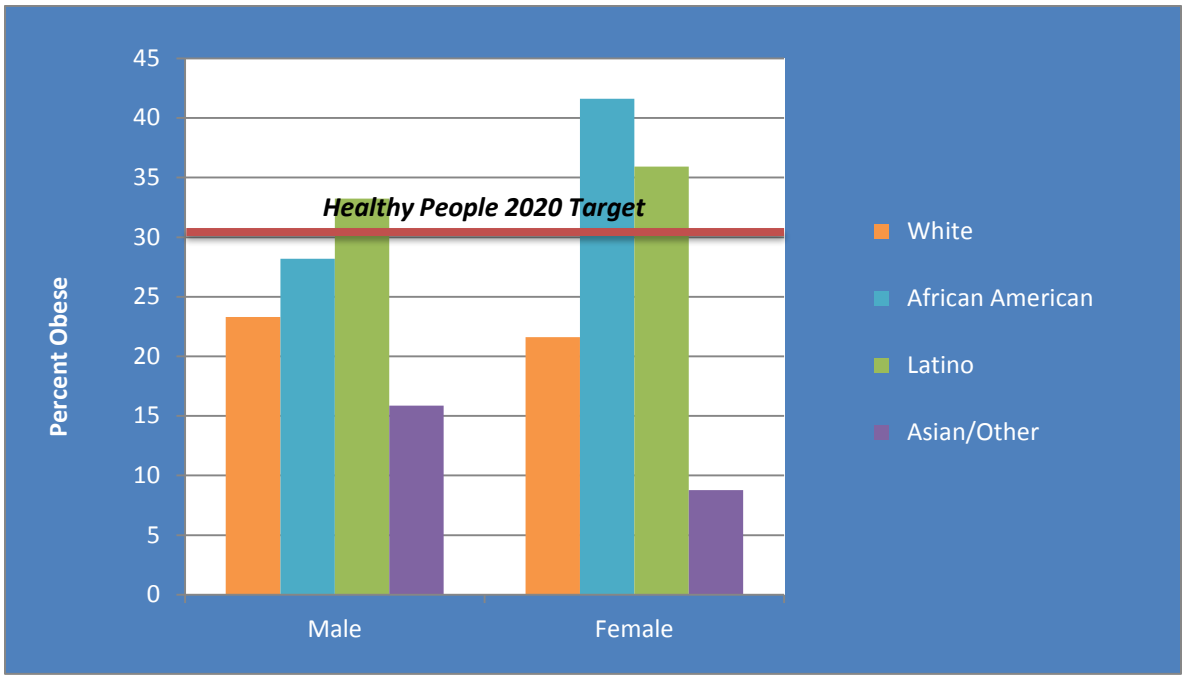


Table 6. Prevalence of Obesity Among California Adults by Sex and Race/Ethnicity, 2012 BRFSS				
	Male		Female	
Race/Ethnicity	**Obese (%)**	**CI**	**Obese (%)**	**CI**
White	23.3	20.5-26.1	21.6	19.2-24.1
African American	28.2	17.3-39.0	41.6	31.4-51.8
Latino	33.2	28.6-37.9	35.9	31.8-40.1
Asian/Other	15.9	9.9-21.9	8.8	4.3-13.3
Notes: CI = Confidence Interval.				

Adolescents

Among California adolescents age 12 to 17, obesity prevalence is highest among African Americans (28.6%) and Latinos (19.7%), regardless of gender. These two race/ethnic groups also exceeded the *Healthy People 2020* target of 16.1% for adolescents.[16]

Figure 7. Prevalence of Obesity Among California Adolescents by Race/Ethnicity, 2011-2012 CHIS

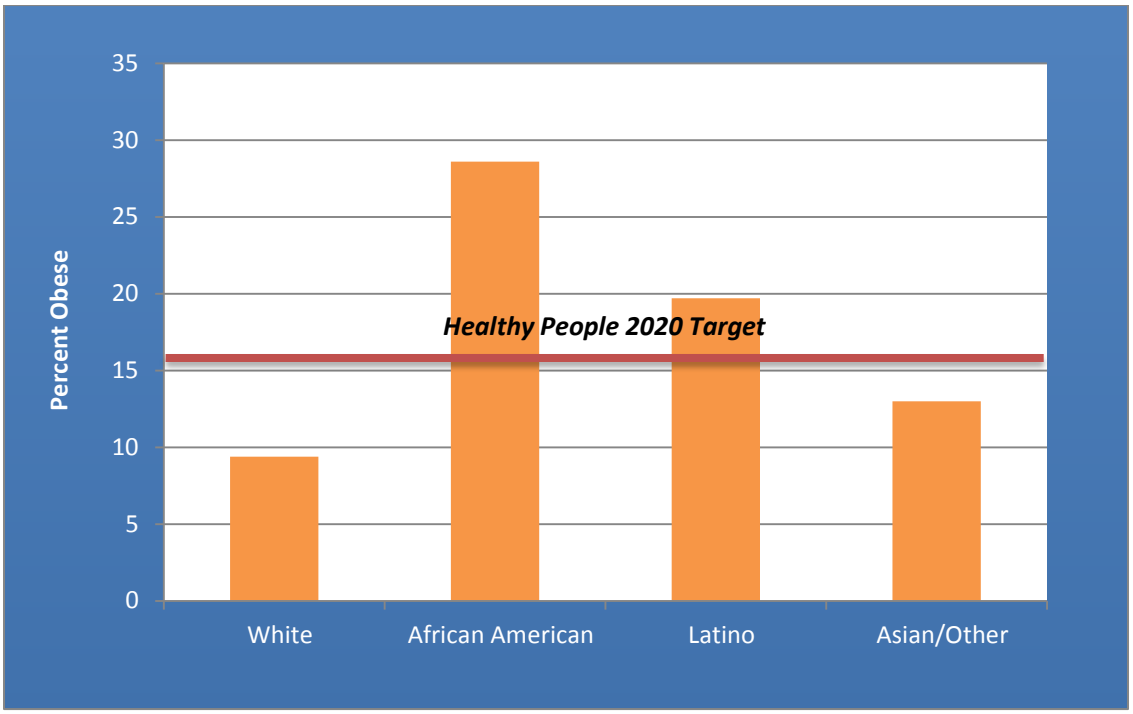


Table 7. Prevalence of Obesity Among California Adolescents by Race/Ethnicity, 2011-2012 CHIS		
Race/Ethnicity	**Obese (%)**	**CI**
White	9.4	7.1-11.8
African American	28.6	16.2-41.0
Latino	19.7	16.0-23.5
Asian/Other	13.0	6.8-19.2
Notes: CI = Confidence Interval.		

Low-Income Children

In 2010, the prevalence of obesity among preschool and school-age children exceeded the *Healthy People 2020* targets of 9.6% and 14.5% in all race/ethnic groups, except for school-age Asian children (12.6%).[16] Rates of obesity among low-income children in California are highest among Hispanics, American Indians/Alaskan Natives, and Pacific Islanders.

Figure 8. Prevalence of Obesity Among Low-Income Children in California by Race/Ethnicity and Age, 2010 PedNSS

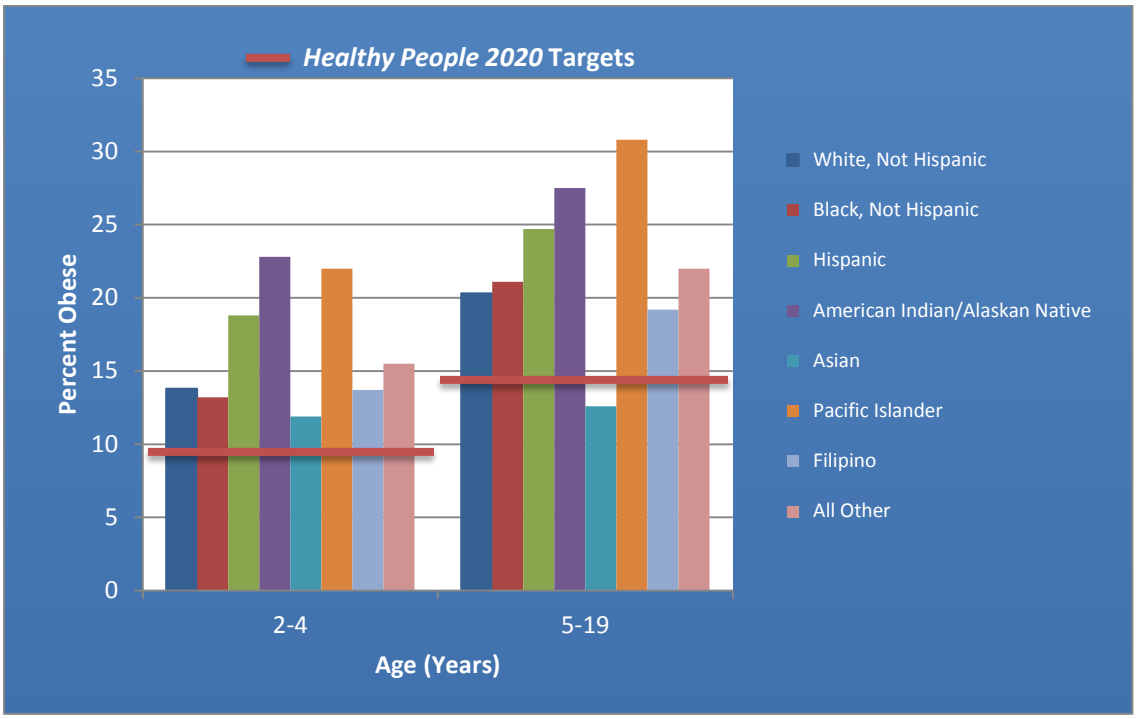


Table 8. Prevalence of Obesity Among Low-income Children in California by Race/Ethnicity and Age, 2010 PedNSS

	2-4 Years		5-19 Years	
Race/Ethnicity	**Obese (%)**	**CI**	**Obese (%)**	**CI**
White, Not Hispanic	13.8	13.4-14.2	20.3	19.9-20.7
Black, Not Hispanic	13.2	12.7-13.8	21.1	20.6-21.6
Hispanic	18.8	18.6-18.9	24.7	24.6-24.8
American Indian/Alaskan Native	22.8	20.3-25.5	27.5	25.0-30.3
Asian	11.9	11.2-12.6	12.6	12.4-13.1
Pacific Islander	22.0	19.4-24.8	30.8	28.4-33.3
Filipino	13.7	11.5-16.0	19.2	17.6-20.9
All Other	15.5	15.2-15.8	22.0	21.7-22.3

Notes: CI = Confidence Interval.

Obesity by Socioeconomic Groups

Adults

In California, there is an inverse relationship between obesity rates and income. Those with the lowest income (0-99% Federal Poverty Level [FPL]) have the highest rates of obesity exceeding the *Healthy People 2020* target of 30.5%.[16] While those adults in the highest FPL group (300% or more) had a rate of obesity approximately 10 percentage points lower. These disparities are supported by findings from the California Dietary Practices Survey.[56]

Figure 9. Prevalence of Obesity Among Adults in California by Household Poverty Level, 2011-2012 CHIS

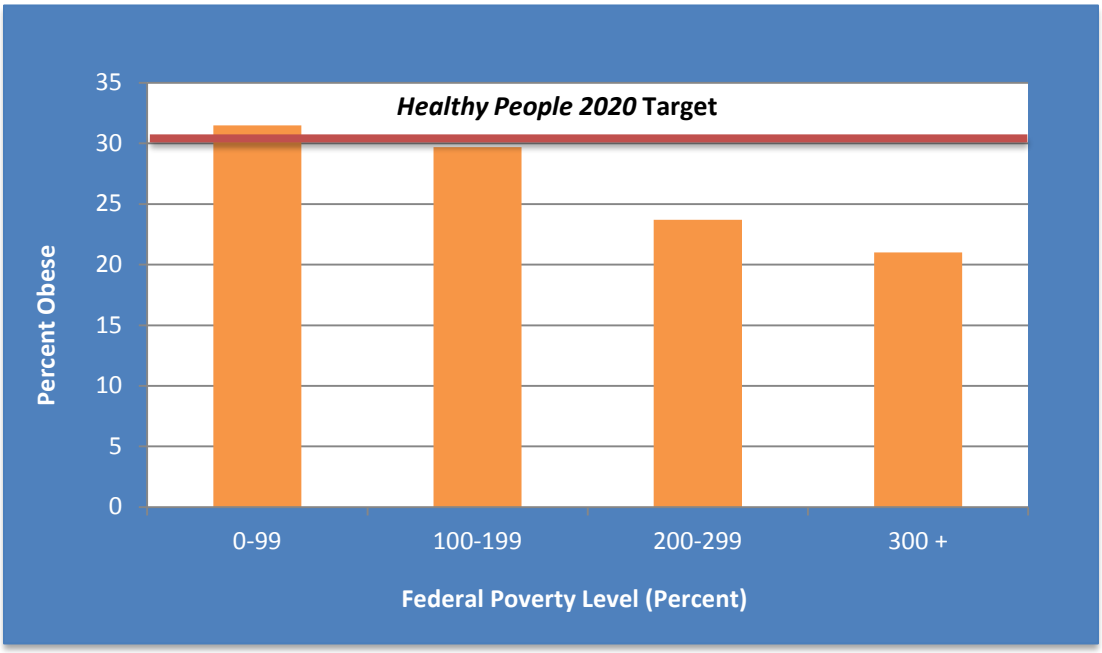


Table 9. Prevalence of Obesity Among California Adults by Household Poverty Level, 2011-2012 CHIS

Federal Poverty Level (%)	Obese (%)	CI
0-99	31.5	29.5-33.6
100-199	29.7	27.9-31.5
200-299	23.7	22.0-25.5
300+	21.0	20.1-21.8

Notes: CI = Confidence Interval.

Adolescents

The same inverse relationship between obesity rates and income exists for adolescents with obesity rates of 20.7% in adolescents from homes below 100% FPL, while those adolescents living above 300% FPL had just half that rate (10.9%). All three groups below 300% FPL exceeded the *Healthy People 2020* target of 16.1% for adolescent obesity.[16]

Figure 10. Prevalence of Obesity Among Adolescents in California by Household Poverty Level, 2011-2012 CHIS

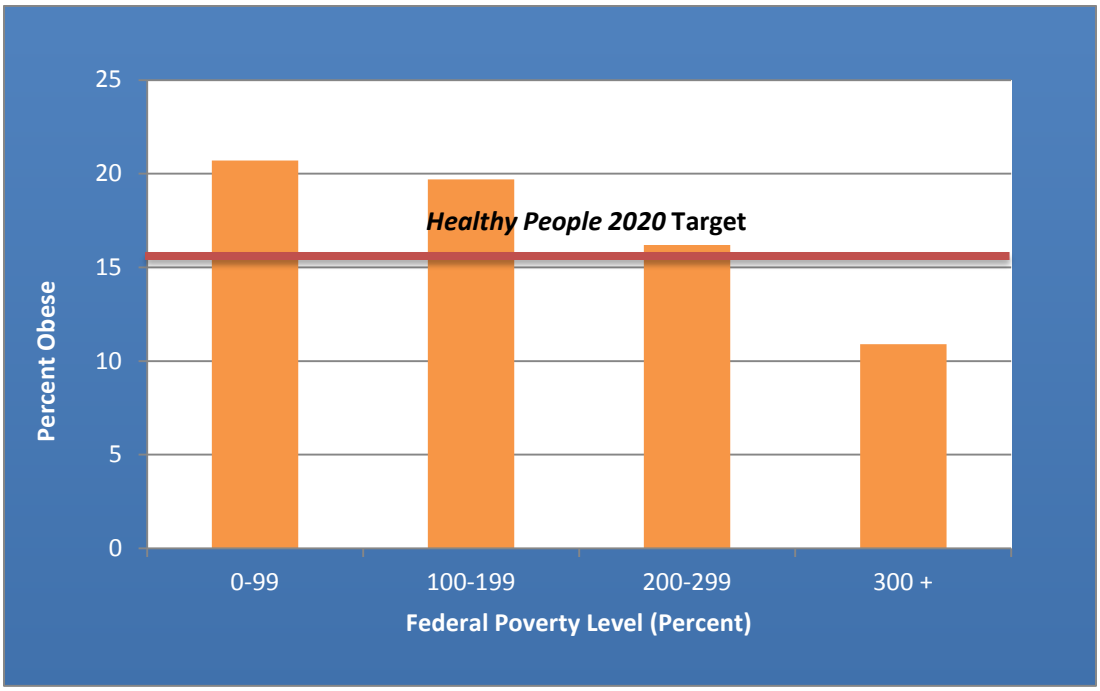


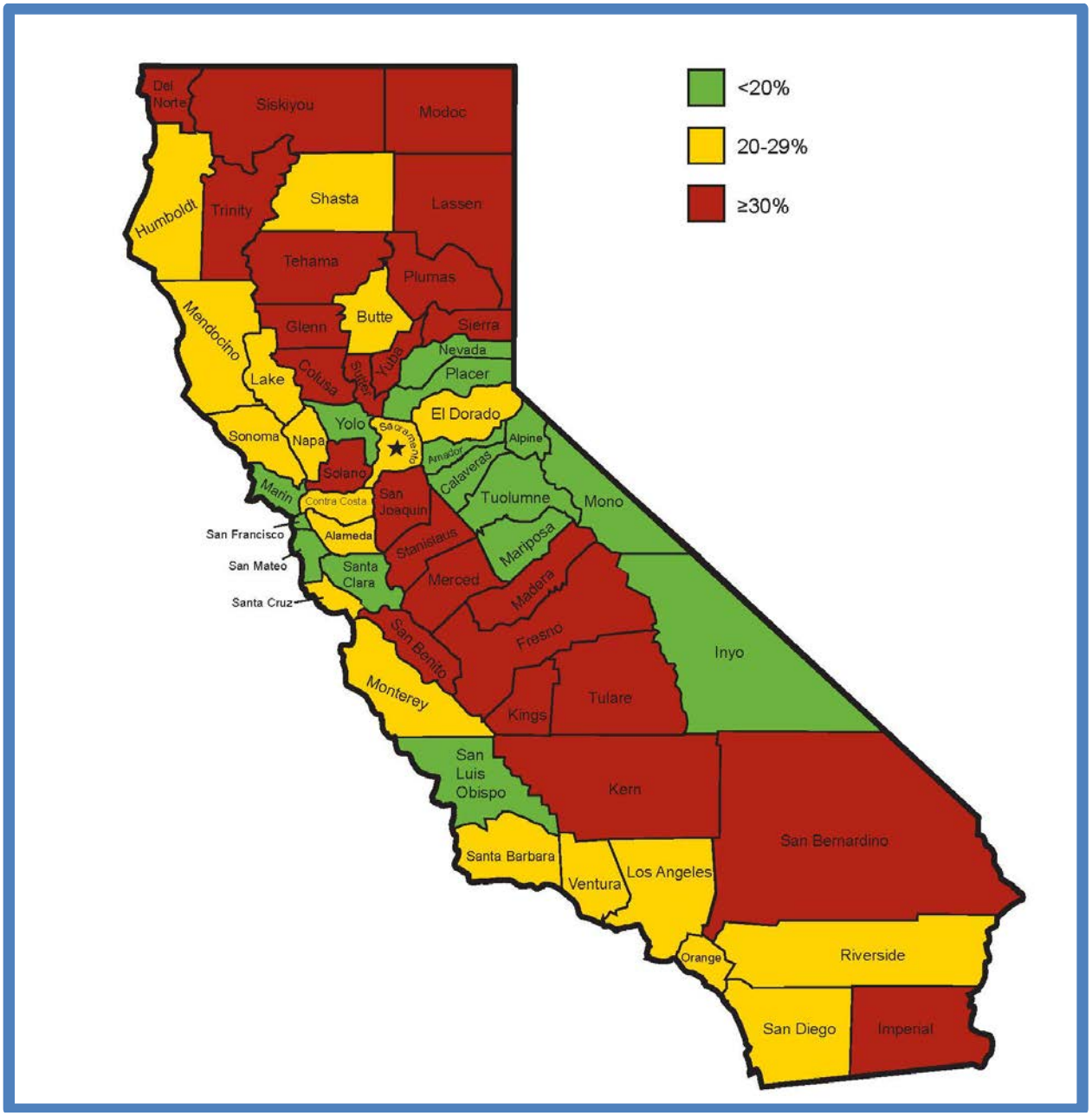
Table 10. Prevalence of Obesity Among California Adolescents by Household Poverty Level, 2011-2012 CHIS		
Federal Poverty Level (%)	**Obese (%)**	**CI**
0-99	20.7	14.9-26.5
100-199	19.7	14.2-25.2
200-299	16.2	9.9-22.6
300 +	10.9	8.2-13.6
Notes: CI = Confidence Interval.		

Obesity by County

Adults

Obesity varies significantly by county in California with only 11.3% of the adults living in San Francisco County obese compared with 41.7% of Imperial County adults (Table 11). One in three counties in California has an obesity rate that surpassing the national *Healthy People 2020* goal (Target: 30.5%).[16] By 2012, 21 California counties had obesity rates of 30.5% or more compared with none of the counties in 2001.[2,16,17]

Figure 11. Percentage of Adults in California Who Are Obese by County, 2011-2012 CHIS



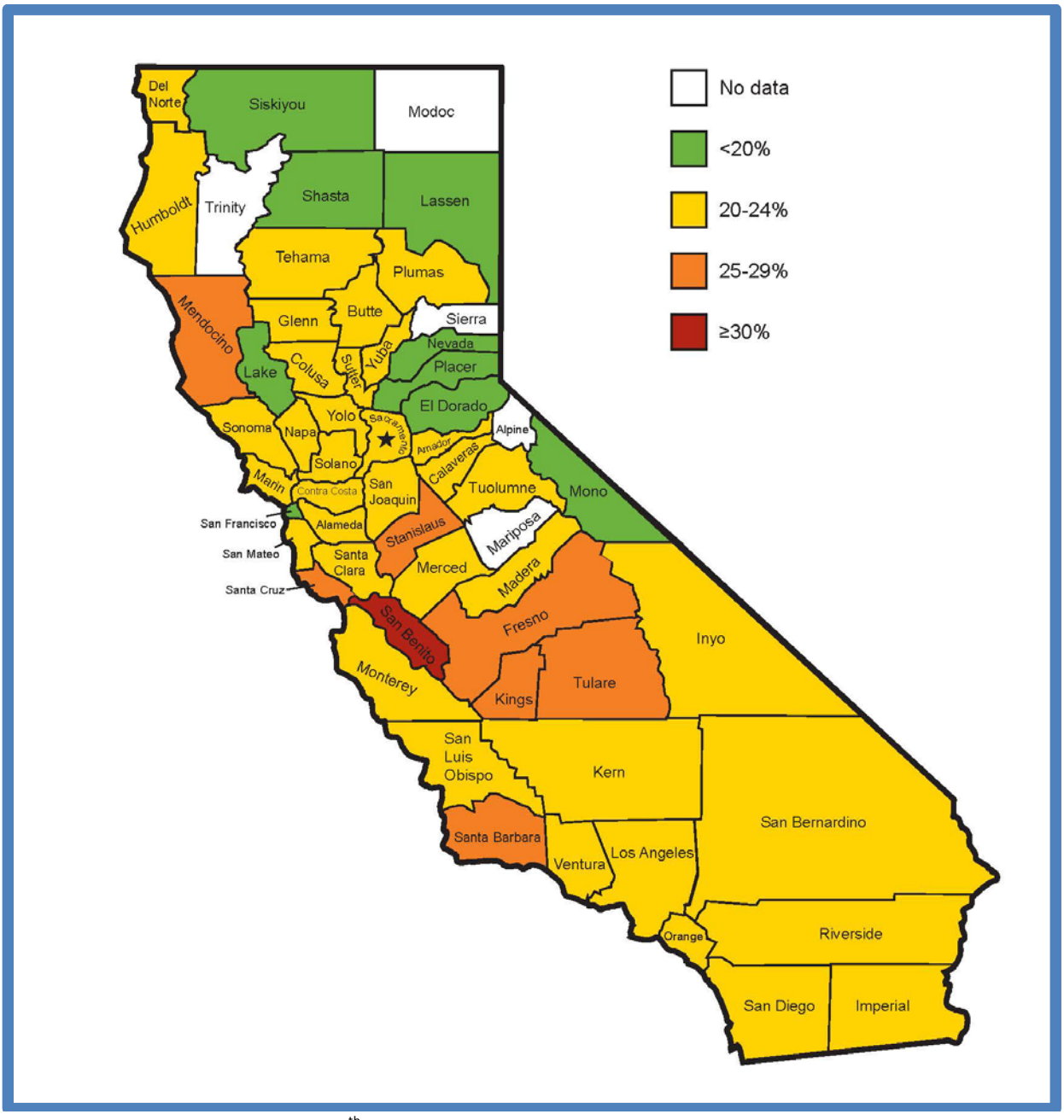
Notes: Obese is a body mass index ≥ 30.

Table 11. Prevalence of Obesity Among Adults in California and by County, 2001 and 2011-2012 CHIS			
	2001	2011-2012	
County	% Obese	% Obese	Rank
Alameda	17.4	21.0	11
Butte	18.9	23.8	17
Contra Costa	20.4	24.0	18
Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra	22.7	31.4	32
El Dorado	18.3	22.9	15
Fresno	26.3	30.0	29
Humboldt	22.0	27.6	26
Imperial	29.0	41.7	44
Kern	25.6	33.2	34
Kings	27.1	36.6	40
Lake	26.1	26.4	23
Los Angeles	20.1	24.7	19
Madera	25.4	34.4	37
Marin	11.8	13.9	3
Mendocino	21.7	26.5	24
Merced	29.6	34.1	36
Monterey	25.3	25.1	20
Napa	17.7	28.9	28
Nevada	15.6	18.5	7
Orange	14.8	23.1	16
Placer	15.7	18.1	6
Riverside	20.9	25.9	22
Sacramento	21.8	28.0	27
San Benito	-	41.2	43
San Bernardino	24.9	33.2	35
San Diego	16.5	22.1	13
San Francisco	11.5	11.3	1
San Joaquin	25.6	34.7	38
San Luis Obispo	16.3	12.6	2
San Mateo	17.4	16.6	4
Santa Barbara	17.2	20.5	10
Santa Clara	15.5	19.3	9
Santa Cruz	15.2	27.1	25
Shasta	20.8	25.7	21
Solano	22.5	35.8	39
Sonoma	14.1	21.5	12
Stanislaus	24.8	30.1	31
Sutter	25.3	30.1	30
Tehama, Glenn, Colusa	24.3	38.2	42
Tulare	23.9	38.0	41
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	16.7	18.7	8
Ventura	17.5	22.7	14
Yolo	18.6	17.8	5
Yuba	26.1	32.2	33
Notes: Rank compares this county's rate to other counties or county clusters with a rank of 1 representing the lowest obesity rate.			

Low-Income Children, 5 to 19 Years

Obesity varies significantly by county in California with 16% or fewer of the low-income school-age children living in Nevada, Mono, and Lassen Counties obese compared with greater than 30% in San Benito County (Table 12).[4] Not a single county in California has an obesity rate among low-income children ages 5 to 19 years that meets the national *Healthy People 2020* target (14.5%).[4,16]

Figure 12. Percentage of Low-Income School-Age Children in California Who Are Obese by County, 2010 PedNSS

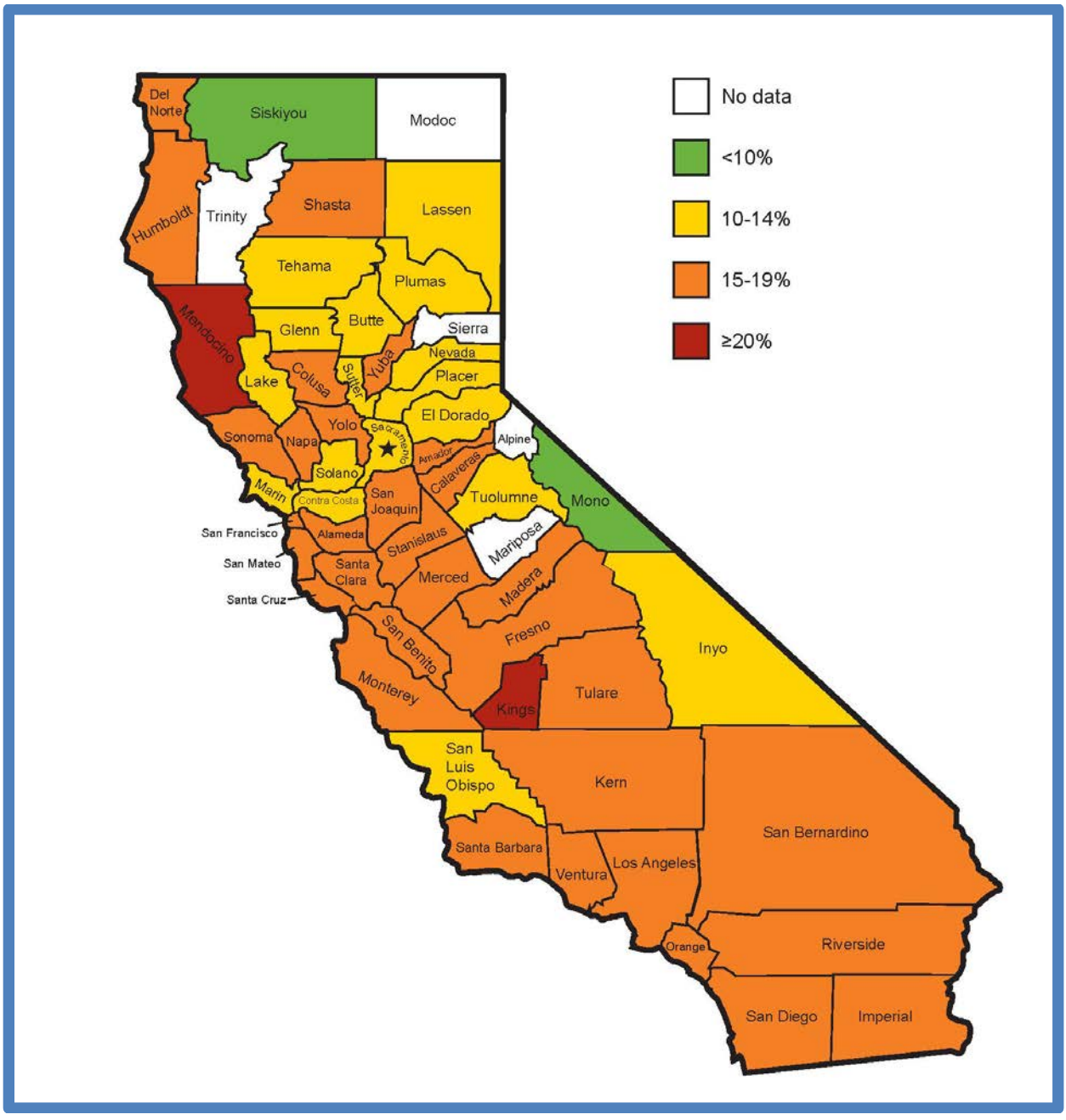


Notes: Obese is a body mass index ≥ 95th percentile.

Low-Income Children, 2 to 4 Years

Obesity varies significantly by county in California with fewer than 10% of the low-income preschool children living in Mono and Siskiyou Counties obese compared with 20% or more in Kings and Mendocino Counties (Table 13).[4] Only one county (Mono County) in California has an obesity rate that meets the national *Healthy People 2020* target (9.6%).[4,16]

Figure 13. Percentage of Low-Income Preschool Children in California Who Are Obese by County, 2010 PedNSS



Notes: Obese is a body mass index ≥ 95th percentile.

Table 12. Prevalence of Obesity Among Low-Income Children in California and by Age and County, 2010 PedNSS				
	2-4 Years		5-19 Years	
County	% Obese	Rank	% Obese	Rank
Alameda	17.4	39	22.8	24
Alpine	*	*	*	*
Amador	17.7	42	20.1	10
Butte	14.1	13	21.0	11
Calaveras	17.0	37	24.4	41
Colusa	15.1	20	23.8	34
Contra Costa	14.8	18	23.8	35
Del Norte	16.5	32	21.1	12
El Dorado	11.8	5	19.5	8
Fresno	18.5	45	25.7	48
Glenn	14.5	14	24.8	42
Humboldt	16.0	26	22.1	20
Imperial	15.7	25	23.4	30
Inyo	14.7	17	21.2	14
Kern	16.3	30	24.8	43
Kings	20.5	52	25.7	49
Lake	14.5	15	19.6	9
Lassen	12.5	8	16.0	3
Los Angeles	18.9	48	23.2	27
Madera	16.1	27	24.3	40
Marin	13.7	9	24.0	36
Mariposa	*	*	*	*
Mendocino	20.6	53	25.8	50
Merced	18.6	46	24.0	37
Modoc	*	*	*	*
Mono	6.4	1	15.7	2
Monterey	19.3	51	24.2	39
Napa	18.6	47	24.9	45
Nevada	10.3	3	15.6	1
Orange	16.9	36	21.1	13
Placer	11.8	6	17.3	4
Plumas	12.0	7	22.3	21
Riverside	16.2	29	22.0	18
Sacramento	13.7	10	21.2	15
San Benito	19.1	49	32.3	53
San Bernardino	15.4	21	22.0	19
San Diego	16.5	33	23.6	32
San Francisco	15.6	23	19.0	6
San Joaquin	16.8	35	23.3	29
San Luis Obispo	13.8	12	23.1	25
San Mateo	17.9	43	23.6	33
Santa Barbara	17.6	40	25.4	47
Santa Clara	17.6	41	23.1	26
Santa Cruz	16.7	34	25.3	46
Shasta	16.1	28	19.3	7
Sierra	*	*	*	*
Siskiyou	9.7	2	18.1	5
Solano	14.9	19	24.0	38
Sonoma	15.6	24	23.5	31
Stanislaus	17.1	38	25.9	51
Sutter	14.6	16	22.7	23
Tehama	13.7	11	21.5	16
Trinity	*	*	*	*
Tulare	18.1	44	26.8	52
Tuolumne	11.4	4	21.7	17
Ventura	19.1	50	24.8	44
Yolo	15.4	22	23.2	28
Yuba	16.3	31	22.5	22
Notes: Rank compares this county's rate to other counties with a rank of 1 representing the lowest obesity rate. *Percentages and ranks are not calculated when N < 100 records.				

Prevalence of Risk Factors for Obesity

The following section examines the current prevalence measures for breastfeeding, dietary behaviors, physical activity, and screen time to evaluate California's progress toward meeting the State objectives for obesity prevention:

- Increase breastfeeding initiation, duration, and exclusivity;
- Increase consumption of fruits and vegetables;
- Decrease consumption of sugar-sweetened beverages;
- Decrease consumption of high energy dense foods (foods that are high in calories but have low nutritional value);
- Increase physical activity; and
- Decrease television viewing time.[20]

These markers reflect the current evidence-based recommendations from the American Academy of Pediatrics, the *2010 Dietary Guidelines for Americans*, the *Healthy People 2020* objectives, and the *2008 Physical Activity Guidelines for Americans*.[16,22,24,35]

Breastfeeding

Breastfeeding has been shown to have a protective effect against obesity, with longer durations of breastfeeding associated with additional reductions in obesity.[21] The American Academy of Pediatrics recommends that babies are breastfed exclusively for about six months and continue to be breastfed for a year or longer with complementary foods.[22] In California, while 91.6% of infants are ever breastfed, and 45.3% are breastfed through the first year of life, only 27.4% of infants reach six months of exclusive breastfeeding.[23]

Table 13. Prevalence of Breastfeeding Among Infants in California	
Ever Breastfed	91.6 %
Breastfed for at least 6 months	71.3%
Exclusively Breastfed for at least 6 months	27.4%
Breastfed through the first year	45.3%
Notes: *Breastfeeding Report Card—United States 2013*; National Immunization Survey, Provisional Data, 2010 births.	

Dietary Behaviors

Fruits and Vegetable Consumption

The *2010 Dietary Guidelines for Americans* recommend that individuals increase their fruit and vegetable intake to promote nutrient adequacy, disease prevention, and overall good health.[24] Evidence suggests that increased intake of vegetables and/or fruits may also protect against weight gain.[25-29] In California, consumption of five or more fruits and vegetables decreases with age. Only 59.6% of California children age 2 to 5 years and 47.6% age 6 to 11 years report consuming five or more servings of fruits and vegetables per day.[2] The prevalence drops to one-quarter among adolescents (25.8%) and adults (23.4%) in California who report that they eat five or more fruits and vegetables per day.[1,2]

Table 14. Prevalence of Dietary Risk Factors for Obesity Prevention Among Californians			
Age	Five or More Fruits and Vegetables per Day (%)[a]	Two or More Sugar-Sweetened Beverages per Day (%)[b]	Ate Fast Food in the Past Week (%)
2-5[c]	59.6	4.4	64.7
6-11[c]	47.6	7.5	69.6
12-17[c]	25.8	29.5	76.4
18+[d]	23.4	15.8	63.6

Notes: [a] Children and adolescents report in servings; adults report in times. [b] Children and adolescents report in glasses; adults report in times. [c] 2011-12 California Health Interview Survey. [d] 2012 Behavioral Risk Factor Survey, 2011-12 California Health Interview Survey (fast food).

Sugar-Sweetened Beverages

Nearly half of the added sugars consumed by Americans come from sugar-sweetened beverages.[24] Children and adolescents who consume more sugar-sweetened beverages have higher body weight compared to those who drink less, and some evidence also supports this relationship in adults.[30-33] Emerging from this is the recommendation to reduce consumption of sugar-sweetened beverages.[24] The latest data on sugar-sweetened beverage consumption indicate that very few (4.4%) young children (2 to 5 years) in California drink two or more glasses per day.[2] Sugar-sweetened beverage consumption increases from young childhood through adolescence with the proportion drinking two or more sugar-sweetened beverages at 7.5% among older children (6 to 11 years), 29.5% in adolescents (12 to 17 years), and 15.8% of adults.[1,2]

Fast Food

Another objective of the *Healthy People 2020* is to reduce the consumption of calories from solid fats and added sugars.[16] While high calorie, low nutrient foods come from many sources, fast foods are often more calorie dense and less nutritious than meals cooked at home.[57,58] Individuals who eat fast food are at increased risk of weight gain and obesity.[34] Therefore, decreasing the consumption of fast foods among Californians can improve diet quality and reduce caloric intake.[57,58] Approximately two-thirds of California's adults (63.6%), young children (64.7%), and older children (69.6%) report eating fast food in the past week.[2] Adolescents are more likely to eat fast food than other age groups in the State with over three-quarters (76.4%) of adolescents reporting that they ate fast food during the past week.[2]

Physical Activity and Screen Time

The *2008 Physical Activity Guidelines for Americans* provide physical activity recommendations to help individuals achieve and maintain a healthy body weight (Table 15).[35] There is strong evidence that regular physical activity helps people maintain a healthy weight and prevent excess weight gain.[35,36] Although close to half (45.6%) of young children meet the physical activity recommendation, the prevalence declines through adolescence.[2] Only 30.4% of older children and 16.1% of adolescents engage in at least 60 minutes of physical activity every day per week.[2] Adults fare slightly better than adolescents, with one-quarter (25.3%) achieving the guideline.[1]

Table 15. Prevalence of Meeting the Physical Activity Guidelines Among Californians

Age	Physical Activity Guideline	Met Guideline (%)
2-5[a]	60+ minutes per day	45.6
6-11[a]	60+ minutes per day	30.4
12-17[a]	60+ minutes per day	16.1
18+[b]	150+ minutes of moderate-intensity or 75+ minutes a vigorous-intensity aerobic activity (or an equivalent combination) per week, along with muscle strengthening exercise 2+ times per week	25.3

Notes: For adults, one minute of vigorous-intensity physical activity counts as two minutes of moderate-intensity physical activity toward meeting the guideline. [a] 2011-12 California Health Interview Survey. [b] 2012 Behavioral Risk Factor Survey.

The American Academy of Pediatrics and the *2010 Dietary Guidelines for Americans* provide a guideline for limiting screen time among children (no more than 2 hours a day).[24,59] Strong evidence shows that more screen time, particularly television viewing, is associated with poor diet quality and obesity in children, adolescents, and adults.[37-39] However, as Californians age they spend more time watching television. The prevalence of limited television viewing (no more than 2 hours a day) is highest among young children 3 to 5 years (63.4%) and lowest in adults (25.3%).[40,41] Approximately half of California's older children and adolescents (56.8% and 48.4%, respectively) report spending two or fewer hours watching television per day.[40]

Table 16. Prevalence of Meeting the Screen Time Guidelines Among Californians

Age	Screen Time Recommendation	Two or Fewer Hours Watching Television (%)
2-5[a]	No more than 2 hours a day	63.4
6-11[a]	No more than 2 hours a day	56.8
12-17[a]	No more than 2 hours a day	48.4
18+[b]	No guideline	25.3

Notes: Child and adolescent data are for weekends only; children age 2 not included in analysis. [a] 2009 California Health Interview Survey. [b] 2011 California Dietary Practices Survey.

Health Consequences and Costs of Obesity

Obesity increases the risk of many health conditions (Table 17) and contributes to some of the leading causes of preventable death, posing a major public health challenge.[18,19] The costs of obesity are substantial and are likely to increase significantly over time with the rising rates of obesity and related health conditions (Figure 14).[1,2,4] Obesity-related health conditions in adults have an estimated cost of $190.2 billion annually, representing one-fifth of the total annual medical cost in the United States.[60] Individuals who are obese have medical costs that are $1,429 higher per year, or roughly 42% greater, than the costs of those with normal body weight.[45]

Table 17. Obesity-Related Health Conditions[18]
Coronary heart disease, stroke, and high blood pressure
Type 2 diabetes
Cancers, such as endometrial, breast, and colon cancer
High total cholesterol or high levels of triglycerides
Liver and gallbladder disease
Sleep apnea and respiratory problems
Degeneration of cartilage and underlying bone within a joint
Reproductive health complications such as infertility
Mental health conditions

California has the highest obesity-related costs in the United States, estimated at $15.2 billion with 41.5% of these costs financed through Medicare and Medi-Cal* (22.5% and 19.0%, respectively).[42] Utilizing California Office of Statewide Health Planning and Development (OSHPD) data, hospital charges for obesity-related conditions and other consequences have increased 39.7% since 2005 (Figure 14). Obesity-related cardiovascular disease (CVD) accounts for the largest proportion of hospital charges, twice the obesity-related cost associated with cancer and diabetes combined (Figure 14). As shown in Table 18, annually there are nearly a half million hospital admissions due to obesity-related conditions in the State, accounting for $33.8 billion in hospital charges. Furthermore, $5.8 billion (17.2%) of these charges are paid by California's Medi-Cal system (Table 19).

* In California, Medicaid is known as Medi-Cal.

Figure 14. Obesity-Related Hospital Charges in California, Total and by Conditions, 2005-2012 OSHPD

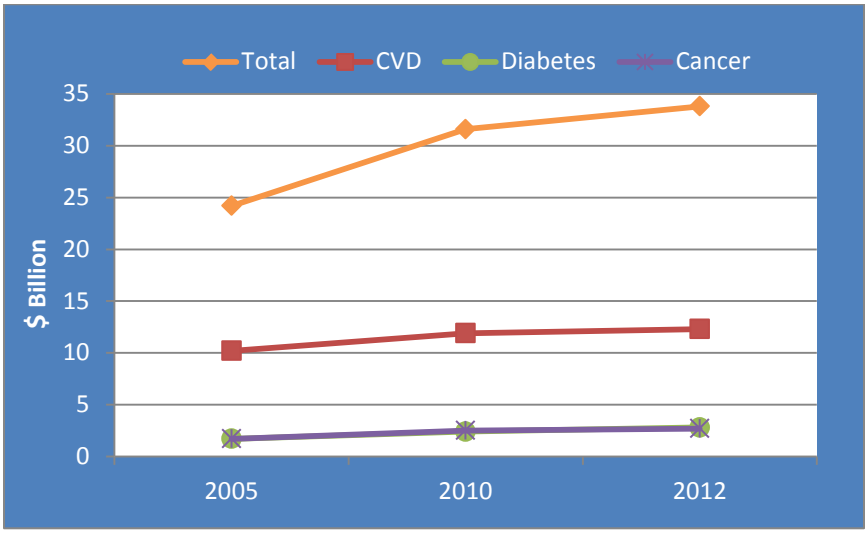


Table 18. Obesity-Related Inpatient Hospital Charges in California, Total and by Conditions, 2012 OSHPD		
Obesity Associated Conditions	**Number of Admissions**	**Hospital Charges, Billion**
Cardiovascular disease	150,660	$12.3
Diabetes	55,108	$2.8
Cancer	31,225	$2.7
Total	429,493	$33.8
Notes: This table was generated using a list of obesity-related ICD 9 codes published elsewhere.[61]		

Table 19. Medi-Cal Obesity-Related Inpatient Hospital Charges in California by Conditions and Percent of All Payers, 2012 OSHPD		
Obesity Associated Conditions	**Number of Admissions (%)**	**Hospital Charges, Billion (%)**
Cardiovascular disease	19,729 (13.1%)	$1.9 (15.4%)
Diabetes	13,873 (25.2%)	$0.7 (25.0%)
Cancer	4,166 (13.3%)	$0.4 (14.8%)
Total	63,097 (14.7%)	$5.8 (17.2%)
Notes: This table was generated using a list of obesity-related ICD 9 codes published elsewhere.[61]		

The costs of obesity in California are substantial and will rise if obesity rates are not reduced. If the increasing rates of obesity continue on the present course, California could see a 15.7% growth in obesity-related health care costs and substantial increases in the incidence of diabetes (10,078), cancer (3,320), coronary heart disease and stroke (22,365), hypertension (22,360), and arthritis (14,783) per 100,000 in population by 2030.[44] It is also estimated that if adult BMI was reduced by 5%, California could save $81.7 billion in obesity-related health care costs by 2030.[44]

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